

***Environmental and Safety
Management System***

Workshop

***Environmental and Safety
Management Systems***

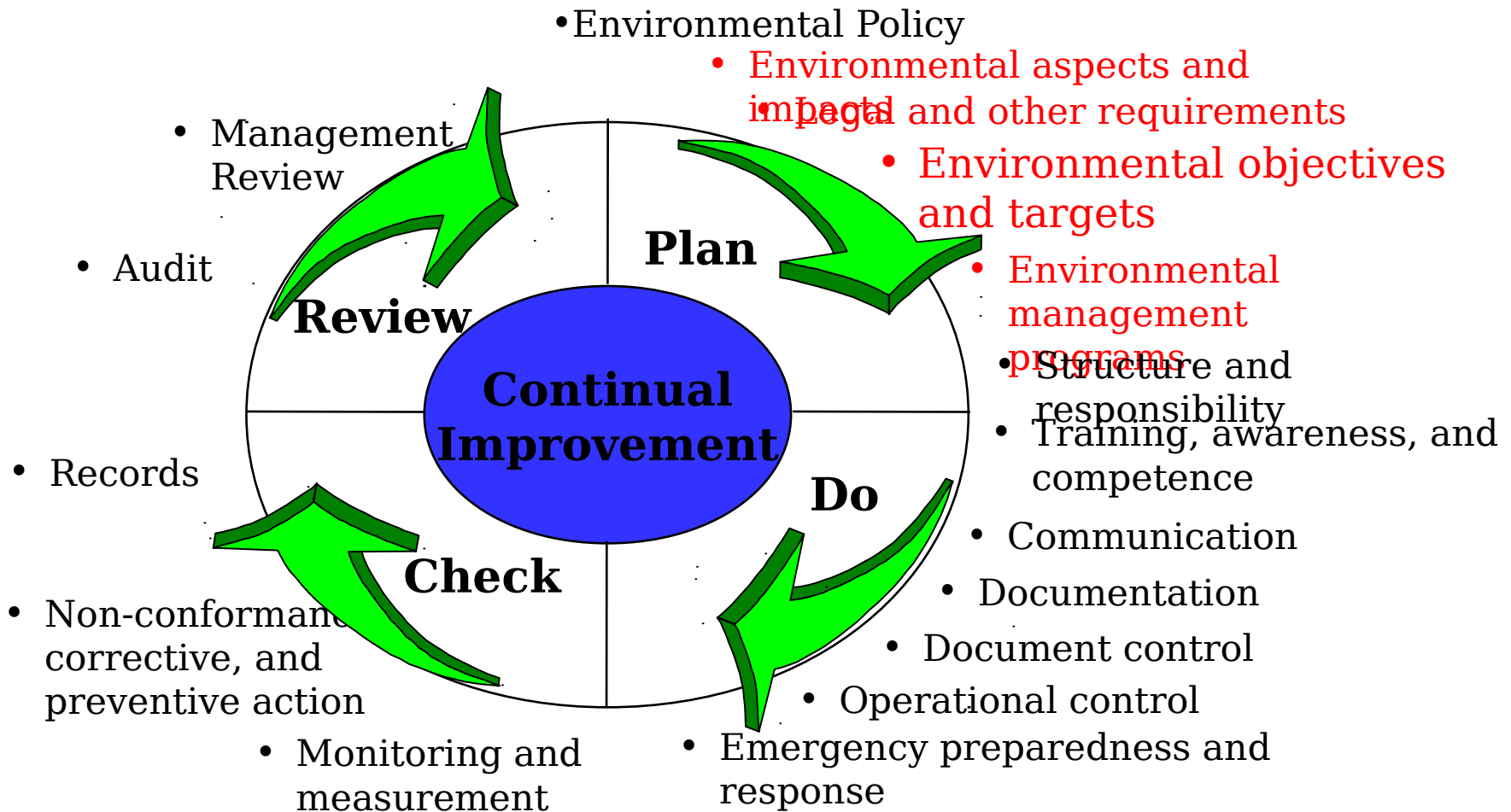
**Beyond Compliance: Protecting Our
Future**

Thursday, October 3, 2002

Acknowledgements

- **Sources of Information and graphics used in preparation of Workshop slides:**
 - **US EPA EMS Training for Federal Facilities**
(www.epa.gov/ems)
 - **NSF International, “*Environmental Management Systems: An Implementation Guide for Small and Medium-Sized Organizations*”** (www.nsf-isr.org)
 - **Ford Motor Company, “*ISO 14000 EMS Work Book*”**
([http://www.dep.state.pa.us/dep/deputate/pollprev / Iso14001/Ford_Manual/fordmanual.htm](http://www.dep.state.pa.us/dep/deputate/pollprev/Iso14001/Ford_Manual/fordmanual.htm))
 - **ALCOA, “*Our Story*” Presentation given at the Pentagon, March 2001**
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Focus of Today's Session



Section 1: EMS Terms and Definitions

Objectives

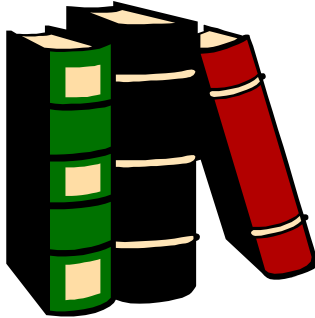
After this discussion, you should be able to:

- **Describe EMS requirements in EO 13148**
 - **Define an EMS**
 - **List elements in an EMS**
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EMS Requirements in EO 13148

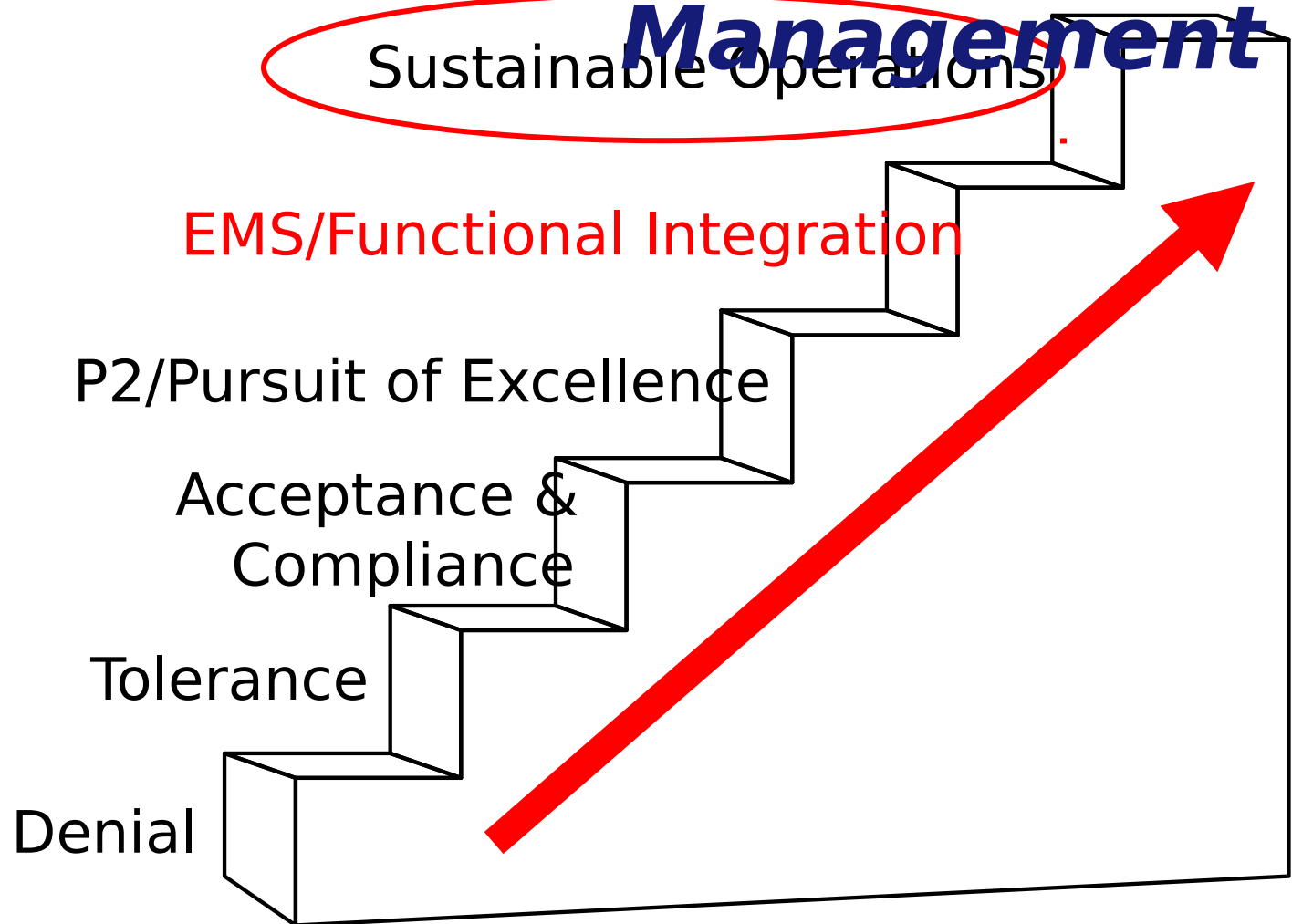
- **Agency level EMS self assessment by October 2001**
 - **Facility pilot EMS by April 2002**
 - **EMS at all appropriate facilities by December 2005**
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Definition



- **Env. Management System (EMS)**: the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy (ISO 14001)

Evolution of Environmental Management



Why Integrate Environment with Mission?

- Full compliance is not a goal...it's an expectation
- Laws, regulations, and societal expectations for environmental performance are becoming increasingly stringent & demanding
- Compliance costs (including manhours) are expenses we incur to control risks within limits imposed by laws and regulations
- Traditional environmental management vs. EMS:
 - What's the requirement (law, regulation, EO), and how do I meet it?

vs.

- What mission activities entail the greatest risks?
 - Which risks can we influence... which must we accept?
 - What steps can be taken, and by whom, to reduce or eliminate the greatest risks?
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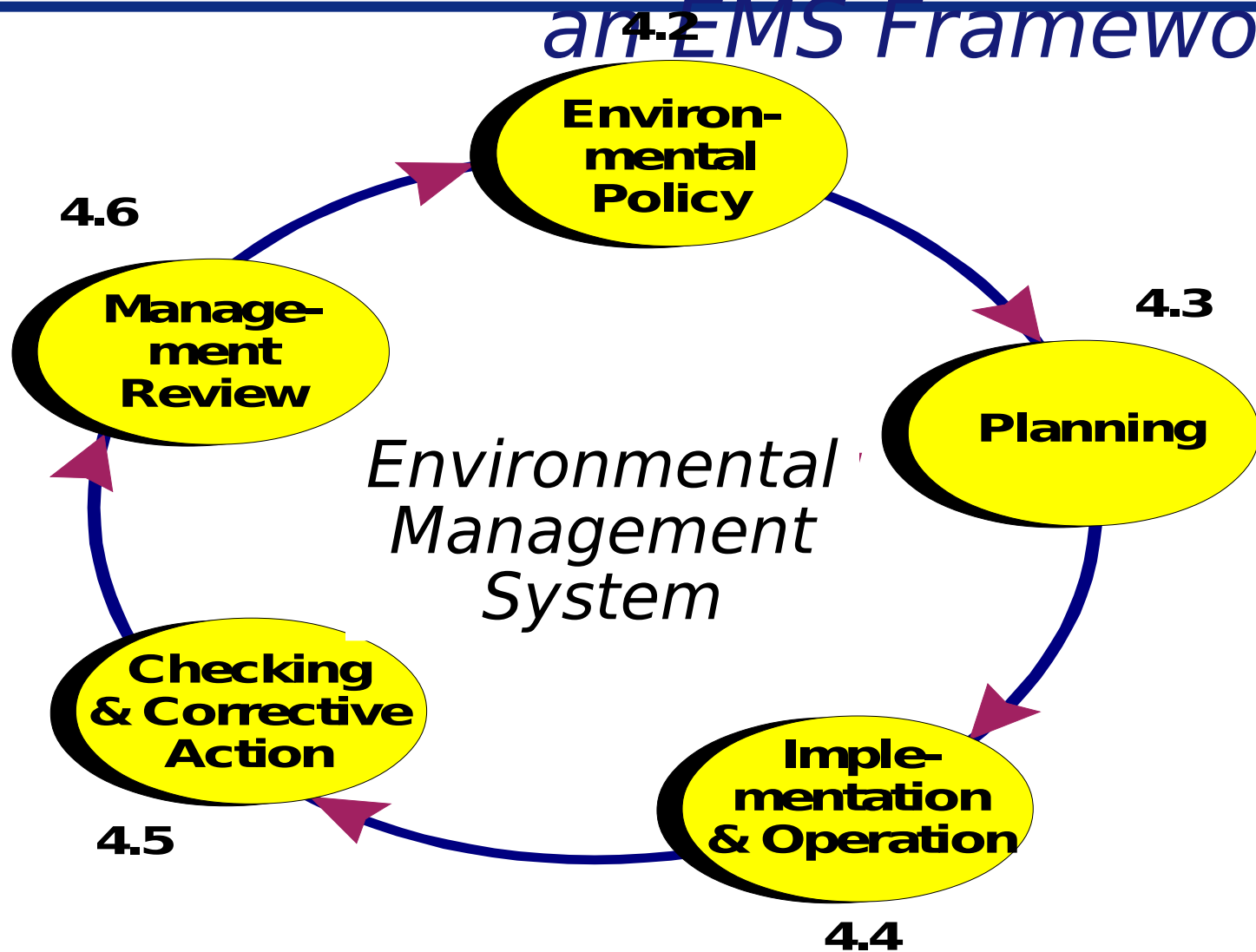
Things About EMS You May Not Know

- **“eMS” versus “Ems”**
 - **It takes time**
 - **You may already have the elements but probably don’t have the system**
 - **Its not an event...its an on-going process**
 - **It gains increased efficiencies through buy-in outside of “environmental”**
 - **Once workers “get the picture,” they take ownership**
 - **Everyone knows their role in environment, and they are held accountable for execution**
-

An EMS is a System

- **Requires awareness of formal structure**
 - **Actively *links* policies, impacts, objectives & targets, procedures, programs and performance**
 - **Doesn't *directly* address compliance components (drums, labels, etc.)**
-

Major Components of an EMS Framework



Policy

- **Issue a policy statement signed by facility manager**
 - **At a minimum, commit to**
 - **Continual improvement**
 - **Pollution prevention**
 - **Environmental compliance**
 - **Identifies EMS framework**
 - **Publicly available**
-

Planning

- **Identify aspects and impacts from facility activities, products, and services**
 - **Review legal requirements**
 - **Set objectives and targets**
 - **Establish formal *Environmental Management Programs***
-

Implementation and Operation

- **Define roles and responsibilities**
 - **Provide EMS and other necessary training**
 - **Establish internal and external communication mechanisms**
 - **Establish document control system**
 - **Establish operational controls - SOPs**
 - **Integrate with or establish emergency preparedness procedures**
-

Checking and Corrective Action

- **Conduct periodic monitoring of environmental performance**
 - **Identify root causes of findings and implement corrective and preventive actions**
 - **Maintain records on EMS**
 - **Conduct periodic EMS audit**
-

Management Review

- **Conduct periodic senior management review of EMS**
 - **Revise policies, objectives and targets as needed**
-

What's Missing?

- **Focus on improvement vs. compliance**
 - **Top level management commitment**
 - **Management review**
 - **Ownership across the organization**
 - **Formal awareness of “system”**
 - **Or is it something else?**
-

Section 2. Getting Started: EMS Team and Policy

Objectives

After this discussion, you should be able to:

- **Identify individuals at your facility for the EMS team**
 - **Describe the roles of EMS team members**
 - **Identify critical factors for success of EMS team**
 - **List the things that should be included in an environmental policy statement**
-

The EMS Team

- **Find champion(s)...where do you look?**
 - **Draw from all organizations - budget, planning, personnel, “line” managers**
 - **Look for volunteers**
 - **Get EMS training for team members**
 - **Remember! EMS is owned across the facility**
-

Functions of the Team

- **Get management buy-in - authority to act**
 - **Initiate first steps such as gap analysis**
 - **Collect input from employees, management**
 - **Build facility-wide recognition & understanding of EMS**
 - **Plan and implement EMS, and help others “*internalize*” the process**
 - **Interact with local community and other stakeholders...inform, and become informed**
-

Knowledge and Skills Needed for Team

- **EMS knowledge and understanding**
 - **Project management skills**
 - **Enthusiasm, energy and patience**
 - **Communication/training skills**
 - **Process/systems knowledge**
 - **(p)olitical savvy - knowledge of what works for your facility**
-

Making a Case for EMS

- **Identify your facility's priorities**
 - **Mission statements**
 - **Existing resource allocation**
 - **Determine management's priorities**
 - **Facility decision drivers**
 - **Agency/service/regional priorities and goals**
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Promoting the EMS: Getting authority to act

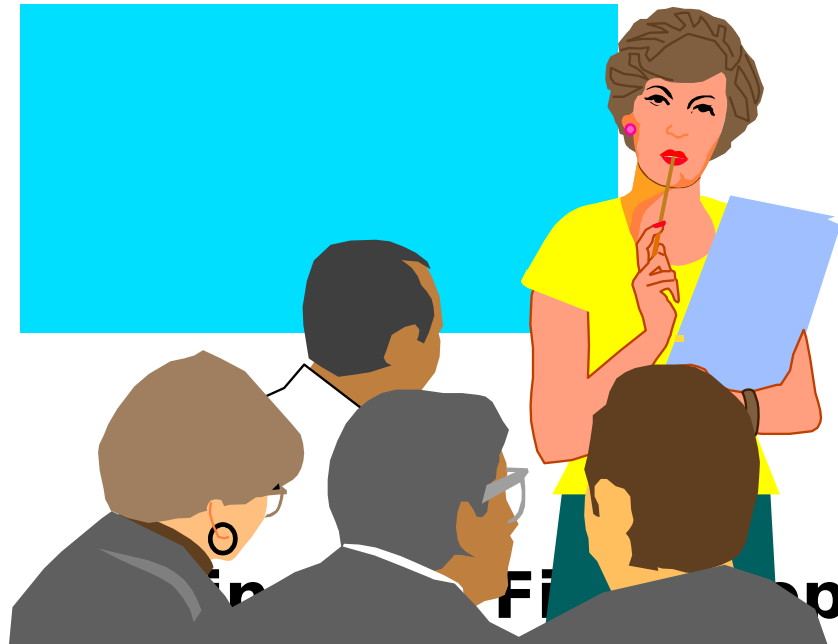
Obtaining leadership commitment is essential:

- **EMS is a well-founded systems approach!**
 - **Ground the EMS in priorities**
 - **Enhance facility mission**
 - **Improve overall efficiency**
 - **Reduce cost**
 - **Improve compliance**
 - **Reduce overall impacts**
-

Quick Review of Environmental Policy

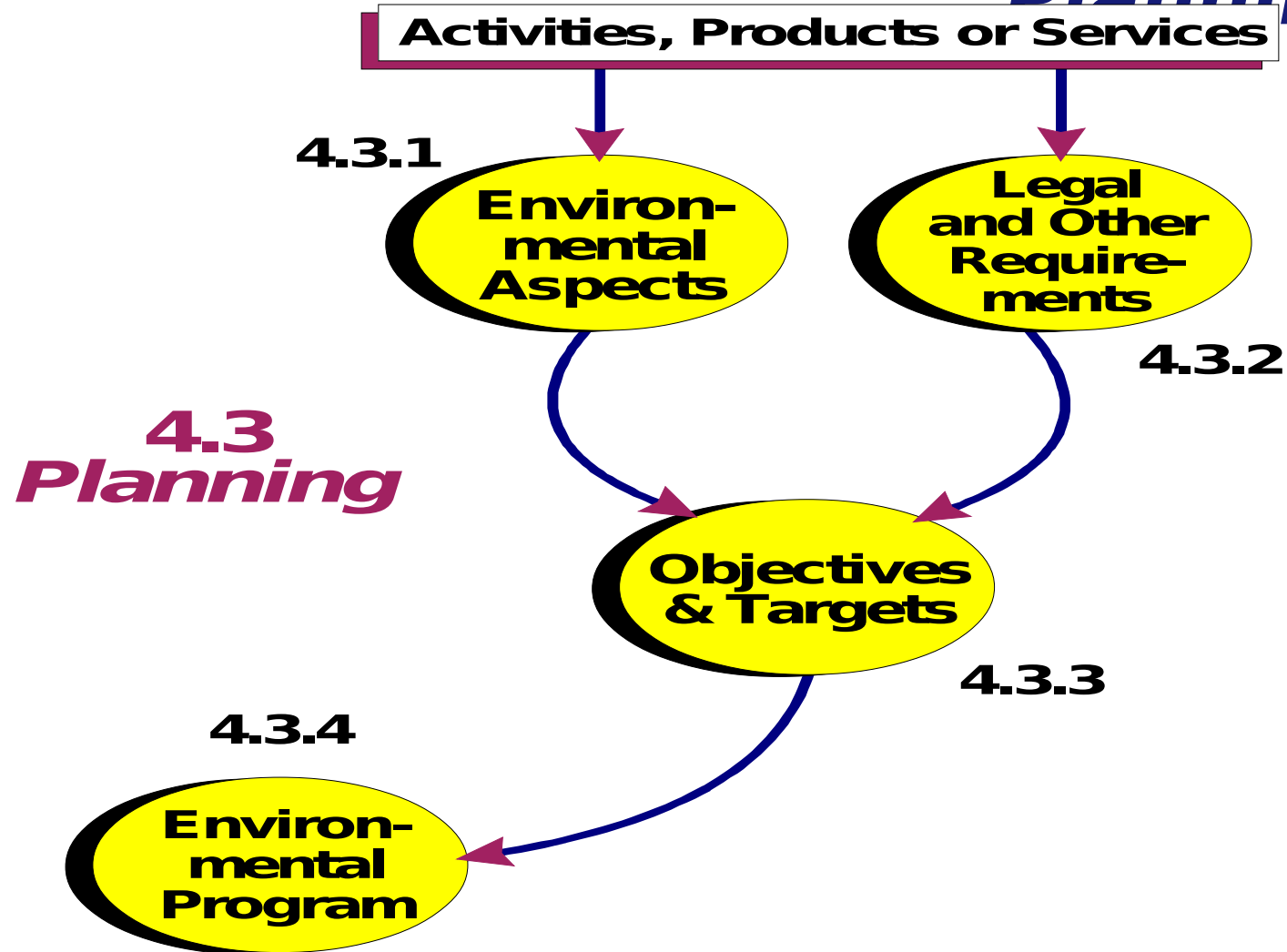
- **State intentions and principles regarding the organization's environmental performance**
 - **Set direction for development of EMS**
 - **Set expectations of stakeholders**
 - **State commitment to compliance, prevention of pollution, and continual improvement**
 - **Provide framework for action and setting of objectives and targets**
 - **Simple, explicit, and auditable**
 - **Available to the public**
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Section 3. Planning: Core of the EMS

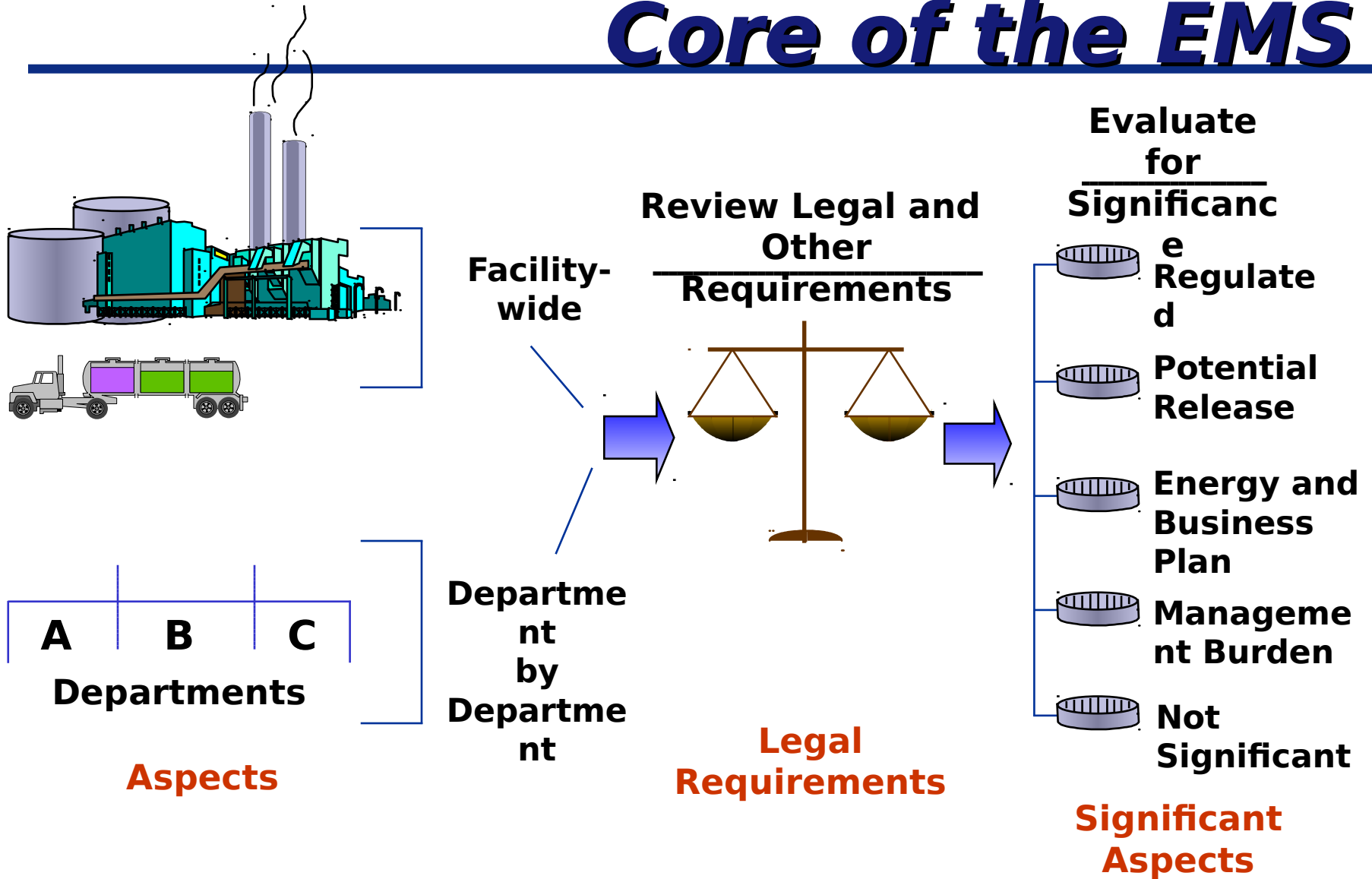


Details of EMS

~~“Planning”~~



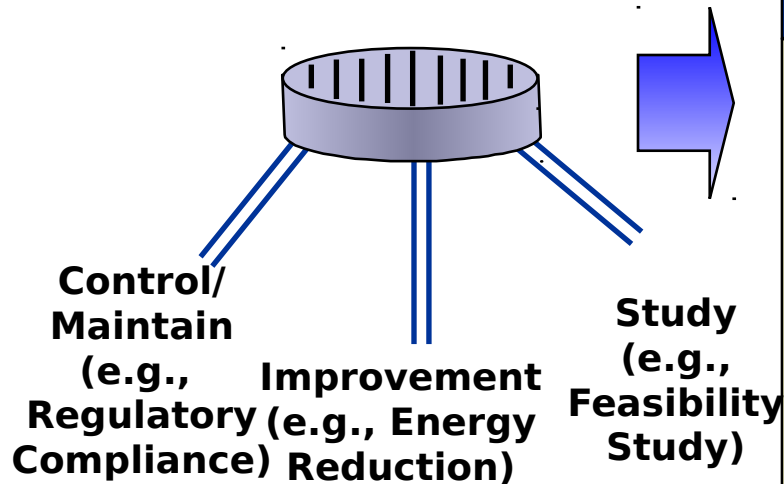
Planning: Core of the EMS



Planning: Core of the EMS

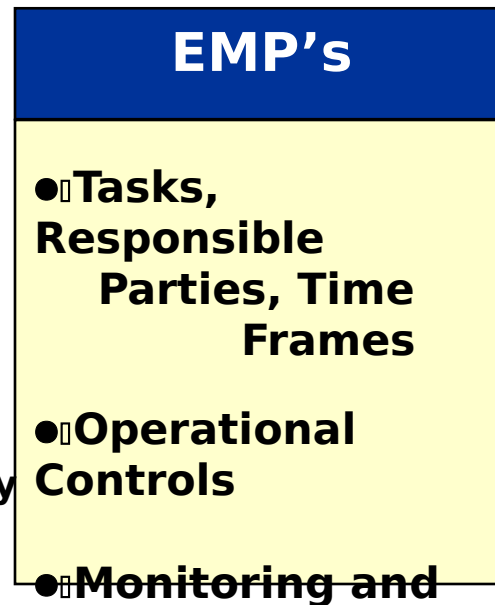
**Categorize
Objectives
and Targets**

**Significant
Aspects**



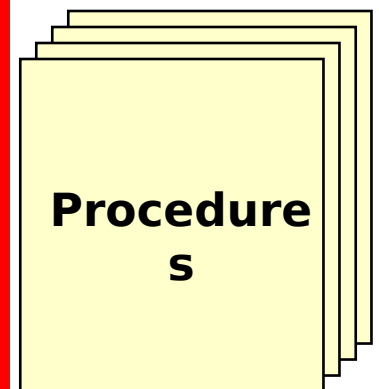
**Objectives and
Targets**

**Develop Environmental
Management Programs
“Project Plan”**



**Environmental
Management
Programs**

**Develop
Procedures and
Work Practices**



**Work
Prt.1**

**Work
Prt.2**

**Work
Prt.3**

**Procedures/Work
Practices**

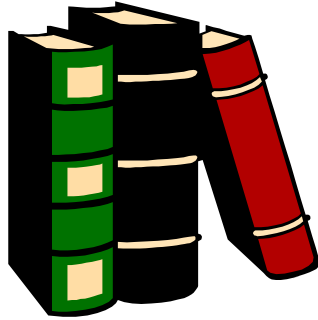
Section 3a: Identifying Environmental Aspects and Impacts

Session Objectives

After this discussion, you should be able to:

- **Describe environmental aspects and impacts and how they fit into an EMS**
 - **Identify environmental aspects and impacts in operations**
 - **Understand a few ways to determine significance**
 - **Describe the importance of significant environmental aspects for your EMS.**
-

Definition



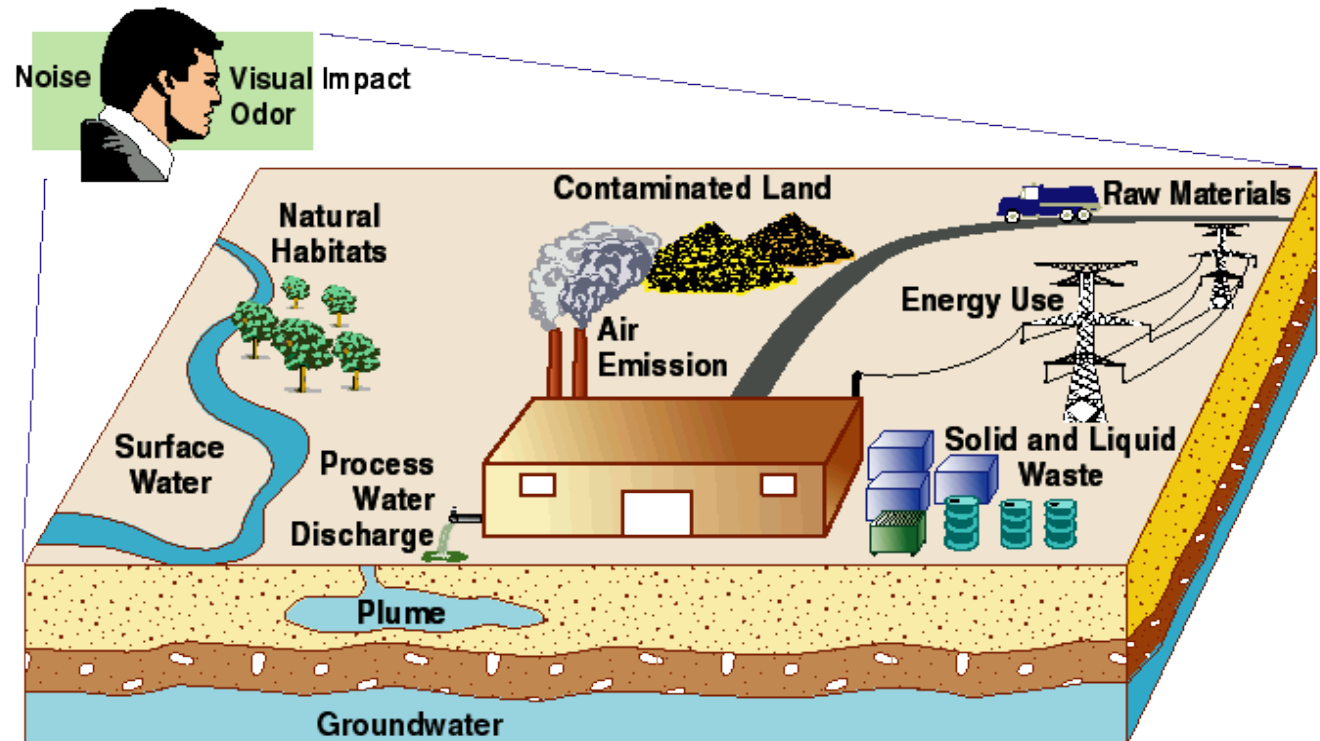
- **An *environmental aspect* is the part of an activity, product, or service that interacts with the environment. An aspect can be thought of as the actual or potential “cause” of an environmental impact.**
 - **IMPORTANT! Aspects can be and are both regulated and unregulated.**
 - **Examples?**
-

Environmental Aspects



How does your organization interact with the environment?

Aspects: Environmental Interactions

- Activities
- Products
- Services



Relationship of Activity, Environmental Aspect, and Impact

**Activity,
Products,
Services**  **Aspect**  **Impact**

Process  **Cause**  **Effect**

(what-you-do)
Consequence)

(think “use of”)

(env.

Examples

Activity, Product, or Service

- **Vehicle maintenance**

Environmental Aspects

- **Hazardous waste generation**
 - **Gasoline consumption**
 - **Noise generation**
 - **Electricity consumption**
 - **Solid waste generation**
 - **Water consumption**
 - **Waste water generation**
 - **Release of volatiles**
-

Examples

Activity, Product, or Service

- **Office work**
-

Environmental Aspects

- **Electricity consumption**
 - **Water consumption**
 - **Waste water generation**
 - **Use of ozone depleting substances in air cooling units**
 - **Solid waste generation**
 - **Heavy metals in computers**
-

Environmental Aspects and the EMS

- **When first developing EMS, conduct a comprehensive aspects analysis - a TEAM effort!**
 - **Establish/maintain procedures to identify environmental aspects**
 - **Determine which aspects are “significant” (lead to significant environmental impacts)**
 - **Consider significant aspects in setting objectives**
 - **Remember your “boundaries”**
 - **Controlled or influenced?**
 - **Actual or potential?**
 - **Keep aspect information up-to-date**
 - **Reflect changes in activities, products, services**
 - **Reflect changes in policy**
-

Identifying Aspects

Look at what you do...and how you do it

- **Identify all areas & departments**
- **Identify corresponding activities, processes & services**
- **Use Cross-functional teams**
- **Record specific aspects**



Significant Aspects

- ***A significant environmental aspect is an environmental aspect that has or can have a significant environmental or mission impact***
 - ***Can be positive or negative***
 - ***Significance could be tied to:***
 - **Environmental concerns**
 - **Energy and natural resource concerns**
 - **Regulatory or legal exposure**
 - **Business or mission priorities**
 - **Concerns of stakeholders**
 - ***Only significant aspects are further managed***
-

Several Methods for Determining Significance

- **Establish a formal procedure for evaluating significance**
 - **Risk Assessment**
 - **Decision Matrices**
 - **Significance Set by Management**
-

Characterizing Risk

- **Exposure - How big of a problem is it?**
 - **Global, regional, local?**
 - **Severity - How bad will it get?**
 - **Probability - How likely is it to occur?**
 - **Daily, weekly, monthly, annually, in emergencies, only when a certain event happens, when a new project starts?**
-

Decision Matrices

- **A decision matrix is a tool used to quantify a risk assessment**
 - **Identify key criteria**
 - **Determine relative ranking**
 - **Evaluate significance**
-

Significance May Be Defined by Management

- **Agency Priorities**
 - **Bureau or Service priorities**
 - **Regional priorities**
 - **Management priorities**
 - **Environmental Goals**
-

Determining Significance

Consider mission and environmental impacts:

- **Are impacts actual or potential?**
- **Are impacts beneficial or damaging?**
- **What is the magnitude or degree of the impacts?**
- **What is the frequency or likelihood of the impacts?**
- **What is the duration and geographical extent?**
- **Which parts of the environment are impacted?**
- **Is the impact regulated?**
- **Which impacts are of greatest concern to local communities and other stakeholders?**

“Weighting” and results are mission and location-specific

Summary

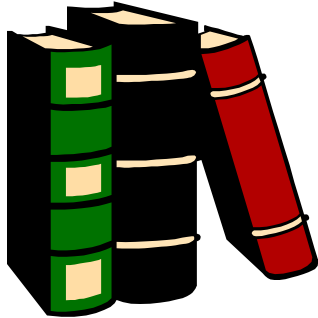
- **An EMS includes procedures for aspect identification and update**
 - **Significant impacts are defined based on facility-specific criteria**
 - **A formal procedure is used to evaluate significance**
 - *Identifying and listing significant impacts is a critical part of an EMS - from it flow all other actions of the EMS*
-

Section 3b: Setting and Maintaining Environmental Objectives and Targets

Session Objectives

- **Answer the following questions:**
 - **What are objectives and targets?**
 - **How are they linked to aspects and impacts?**
 - **How are they linked to your organization's mission?**
-

Definitions



- **Env. Objective**: Overall goal, arising from the ... policy, and associated with significant impacts ... which is quantified where practicable
- **Env. Target**: Detailed performance requirement, quantified where practicable, ... that needs to be set and met in order to achieve ... (the stated objective) ...

Organizations Shall Consider:

- **Legal and other requirements**
 - **Significant environmental aspects**
 - **Technological options**
 - **Financial, operational and business requirements**
 - **Views of interested parties...
stakeholder interests and priorities**
-

Other Key Factors in Setting Objectives and Targets

- **Ability to control**
 - **Ability to track/measure**
 - **Cost to track/measure**
 - **Progress reporting**
 - **Links to policy commitments, mission priorities, and other business plans**
-

Factors in Maintaining & Reviewing Objectives & Targets

- **Set up a tracking system**
 - **Determine how to measure progress toward objectives**
 - **Assess progress and changes in policy**
 - **Communicate results**
 - **Close the feedback loop**
 - **Recognize success (and failure)**
 - **Update objectives and targets**
 - **Drive continual improvement**
-

Examples

Objective: Reduce energy consumption

Target: Reduce energy consumption by 25% by the year 2005 based on a 2000 calendar year baseline.

Objective: Improve environmental compliance

Target: Reduce the number of internal environmental compliance audit findings by 50% on an audit-to-audit basis.

Environmental Management Programs

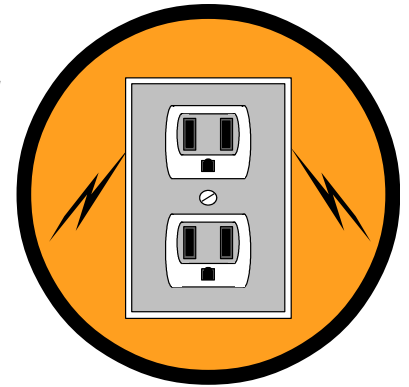


- **Establish & maintain programs for achieving objectives and targets**
- **Identify means, responsibilities and timeframes**
- **Review new projects or changes for applicability to existing programs**

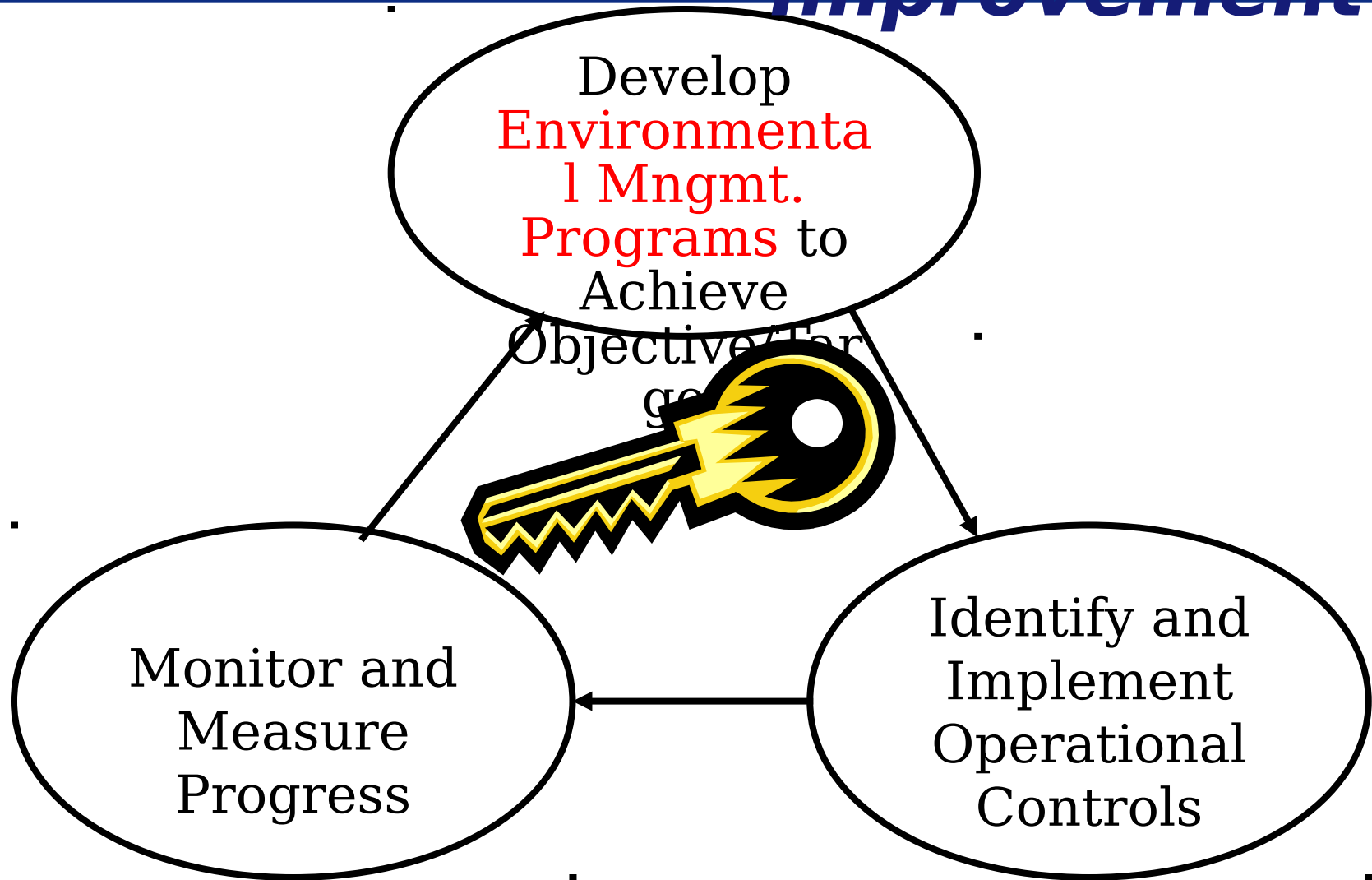
Environmental Management Programs:
mission activities and environment performance at the significant
through implementation and monitoring of operational controls

Environmental Management Programs

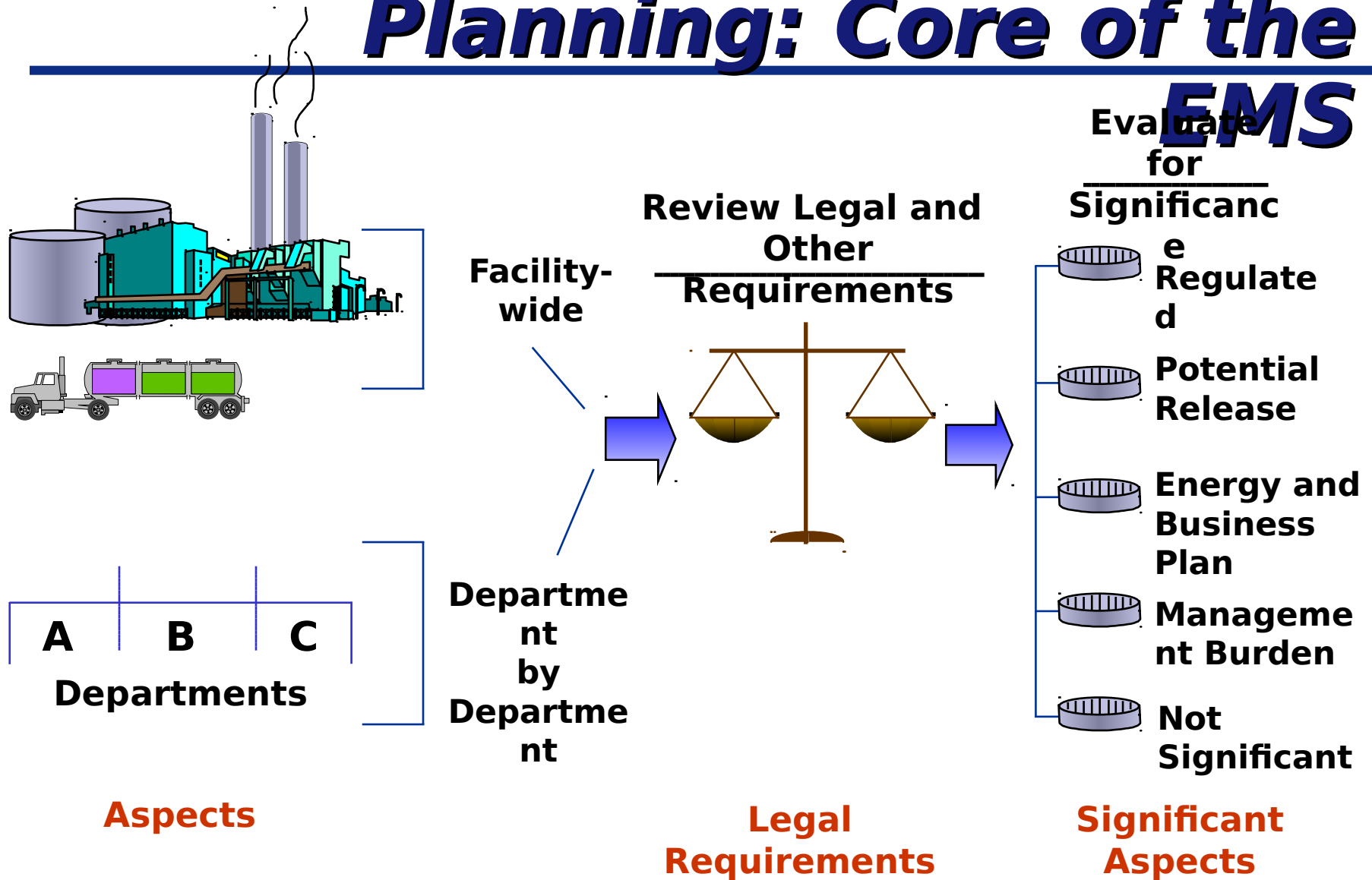
- **Environmental Management Programs may target:**
 - **Pollution prevention, waste minimization, recycling**
 - **Green Procurement**
 - **Energy management**
 - **Materials management**
 - **Compliance assurance**
 - ***Mission priorities, operational efficiency, cost***
 - **Safety and health**
 - **Others, based on organizational priorities**



Key to Continual Improvement



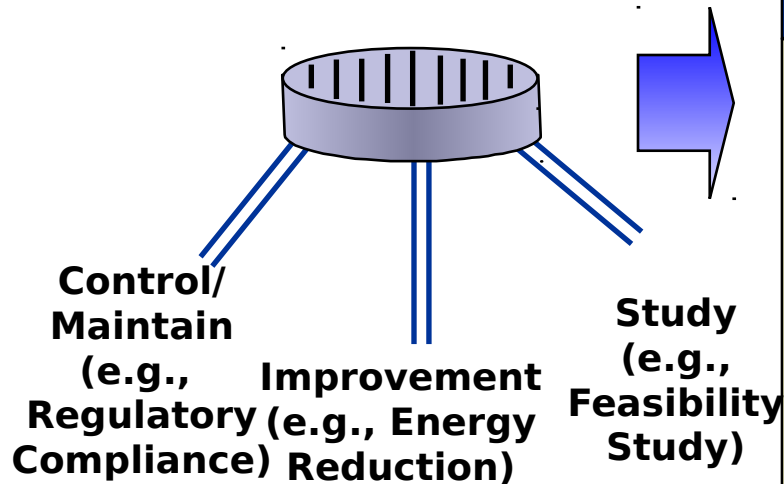
Refresher Slide 1 -- Planning: Core of the **EMS**



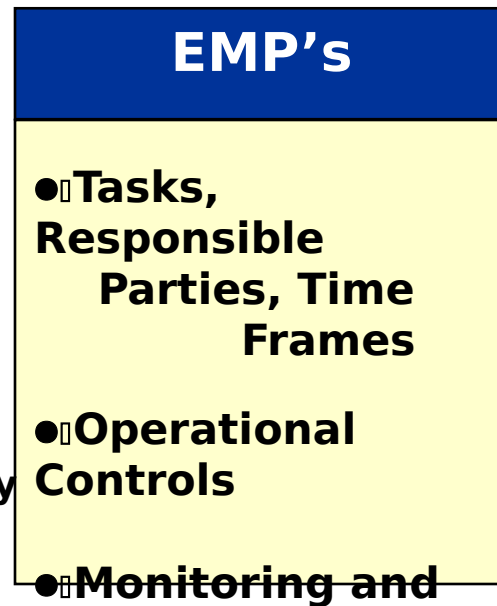
Refresher Slide 2 -- Planning: Core of the

**Categorize
Objectives
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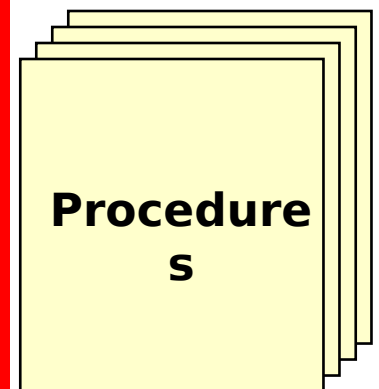


**Develop Environmental
Management Programs
“Project Plan”**



**Environmental
Measurement
Management
Programs**

**EMS
Procedures and
Work Practices**



Work
Prt.1

Work
Prt.2

**Procedures/Work
Practices**
Work
Prt.3